CLAIMS

1. A process for the production of sulphuric acid, wherein a sulphur dioxide-containing feed gas is reacted, at least in part, with oxygen in at least two contact stages (6_1 ....6_n) of main contacts (2,3), arranged in series, to generate sulphur trioxide, and wherein the generated sulphur trioxide-containing gas is fed to an absorber (4, 5, 16) and reacted therein to sulphuric acid, **characterized in** that a partial stream (T) of the sulphur dioxide and sulphur trioxide-containing gas is withdrawn from a contact stage (6_1 ...6_{n-1}, 22_1...22_n) located upstream of the last main contact stage (6_n), and that the said partial stream (T) is mixed with the feed gas to form a contact gas having a sulphur dioxide content of more than 13 % by volume, and then returned to a first contact stage (6_1, 22_1).

2. A process according to claim 1, **characterized in** that the contact gas has a sulphur dioxide content of between 14 and 25 % by volume.

3. A process according to claims 1 or 2, **characterized in** that air and/or technical oxygen is supplied to the feed gas, preferably prior to being mixed with the partial stream (T), and that the O_2 to SO_2 ratio in the contact gas, based on the volumetric portions thereof, is adjusted to less than 1.2, preferably less than 0.8.

4. A process according to any one of the preceding claims, **characterized in** that the volumetric portion of the partial stream (T) supplied to the feed gas, amounts to between 15 and 35% of the contact gas.

5. A process according to any one of the preceding claims, **characterized in** that a pre-contact (15) is provided upstream of the main contact (2,3) to which (pre-contact) the contact gas is fed, that a process gas containing, at best, 13 % by volume of sulphur dioxide is withdrawn from the pre-contact (15), and that the said process gas is supplied to the first contact stage (6_1) of the main contact (2).

6. A process according to claim 5, **characterized in** that the pre-contact (15) comprises one or two pre-contact stages (22_1, 22_2).

7. A process according to claims 5 or 6, **characterized in** that the process gas discharged from the pre-contact (15), prior to being introduced into the main contact (2) is passed through a pre-absorber (16).

8. A process according to any one of the preceding claims, **characterized in** that the process gas discharged from the first main contact (2), prior to being introduced into the second main contact (3), is supplied to an intermediate absorber (4).

9. A process according to any one of the preceding claims, **characterized in** that the process gas discharged from the second main contact (3) is supplied to a final absorber (5).

10. A process according to any one of claims 5 through 9, **characterized in** that at least part of the process gas discharged from the pre-contact (15), via a bypass line (25), is conducted past the pre-absorber (15) directly into the main contact (2).

11. A process according to claim 9, **characterized in** that the gas discharged from the final absorber (5) is subjected to gas scrubbing, in particular, with

hydrogen peroxide, ammonia or sodium hydroxide forming the neutralizing agent for the sulphur dioxide.

12. A process according to any one of the preceding claims, **characterized in** that the partial stream (T), prior to being returned to the first contact stage (6_1, 22_1), is cooled to a temperature <500 °C.

13. A process according to any one of the preceding claims, **characterized in** that the amount of the gas re-circulated as partial stream (T) is adjusted on the basis of the temperature at which the gas leaves the first contact stage (6_1, 22_1).

14. A plant for the production of sulphuric acid, in particular, for carrying out the process according to any one of claims 1 through 13, comprising at least two contact stages (6_1,....6_n) of main contacts (2,3) arranged in series, for converting a sulphur dioxide-containing feed gas with oxygen to generate sulphur trioxide, and comprising at least one absorber (4, 5, 16), **characterized in** that at least one pre-contact stage (22_1, 22_2) is located upstream of the main contact stage (6_1) , and that the exit of one contact stage (6_1...6_{n-1}, 22_1... 22_n) located upstream of the last contact stage (6_n) of the main contact (3), e.g. via a re-circulation line (19), is connected with the inlet of the first pre-contact stage (22_1).

15. A plant according to claim 14, **characterized in** that the re-ciculation line (19) includes a hot gas blower (18).

16 A plant according to claims 14 or 15, **characterized in** that the re-circulation line (19) originates at the exit of the last contact stage (6_3) of the first main contact (2) and leads to the inlet of the pre-contact (15).

17. A plant according to any one of claims 14 through 16, **characterized in** that the re-circulation line (19) originates at the exit of the last contact stage (22_1, 22_2) of the pre-contact (15) and leads to the inlet of the pre-contact (15).

18. A plant according to any one of claims 14 through 17, **characterized in** that the pre-contact (15) comprises one or two pre-contact stages (22_1, 22_2), that the first main contact (2) comprises three main contact stages (6_1, 6_2, 6_3) and that the second main contact (3) comprises two main contact stages (6_4, 6_5).

19. A plant according to any one of claims 14 through 18, **characterized in** that between the pre-contact (15) and the first main contact (2) a pre-absorber (16) is provided; between the first main contact (2) and the second main contact (3) an intermediate absorber (4) is provided and downstream the second main contact (3) a final absorber (5) is provided.

20. A plant according to claim 19, **characterized in** that between the pre-contact (15) and the first main contact (2) a bypass line leading around the pre-absorber (16) is provided.

21. A plant according to any one of claims 14 through 20, **characterized in** that between the inlet lines (20, 9) of the pre-contact (15) and of the first main contact (2) a bypass line (26) leading around the pre-contact (15) is provided.